

CLAIMS:

1. A suspension assembly comprising:
a slider supporting a read/write head; and
a multi-layer laminate substrate having a base layer, an insulator layer and a conductor layer, the laminate substrate further comprising an attachment region for attaching to an actuator arm, a load beam region, a flexure region for supporting the slider, and an interconnect path extending along the flexure region, the load beam region and the attachment region wherein the interconnect path terminates at the attachment region at a connection point to provide an electro-mechanical attachment to the actuator arm.
2. The suspension assembly of claim 1 wherein the base layer defines a top surface of the suspension assembly and the conductor layer defines a bottom surface of the suspension assembly.
3. The suspension assembly of claim 2 wherein a rail defined by at least the base layer extends from the top surface of the suspension assembly.
4. The suspension assembly of claim 1 wherein a portion of the base layer has a thickness greater than a remainder of the base layer.
5. The suspension assembly of claim 1 wherein the interconnect path is defined by the insulator layer and the conductor layer, and further wherein the connection point is defined by the conductor layer.

6. The suspension assembly of claim 1, and further comprising a stiffener member defined by the conductor layer wherein the stiffener member is not electrically connected to the interconnect path.
7. The suspension assembly of claim 6 wherein the stiffener member is positioned along the load beam region.
8. The suspension assembly of claim 6 wherein the stiffener member is positioned along the attachment region to provide a mechanical connection to the actuator arm.
9. The suspension assembly of claim 1, and further comprising a solder connection between the connection point and the actuator arm.
10. The suspension assembly of claim 1, and further comprising a conductive adhesive for attaching the attachment region to the actuator arm.
11. The suspension assembly of claim 1, and further comprising a non-conductive adhesive for attaching the attachment region to the actuator arm.
12. A suspension assembly comprising:
a multi-layer laminate substrate, the laminate substrate having a first end and a second end, and the laminate substrate having an attachment region at the first end for attaching to an actuation assembly, a support region at the second end for supporting an item, a flexible region between the attachment region and the support region, and an interconnect path

extending along a bottom surface of the laminate substrate from the support region to the attachment region.

13. The suspension assembly of claim 12 wherein the multi-layer laminate substrate comprises a base layer forming a top surface of the laminate substrate, a conductor layer forming the bottom surface of the laminate substrate and an insulator layer sandwiched between the base layer and the conductor layer.

14. The suspension assembly of claim 13 wherein the interconnect path is defined by the insulator layer and the conductor layer.

15. The suspension assembly of claim 13, and further comprising a stiffener plate defined by the conductor layer wherein the stiffener plate is not electrically connected to the interconnect path.

16. The suspension assembly of claim 13, and further comprising a rail defined by at least the base layer extending from the top surface.

17. The suspension assembly of claim 16 wherein the multi-layer laminate substrate includes first and second edges extending between the first end and the second end, the rail comprising a first rail formed by a portion of the first edge and the laminate substrate further comprising a second rail formed by a portion of the second edge.

18. The suspension assembly of claim 13 wherein a portion of the base layer has a thickness greater than a remainder of the base layer.

19. The suspension actuation assembly of claim 12 wherein the interconnect path further comprises an interconnect pad located at the attachment region for electro-mechanical connection to the actuation assembly.

20. The suspension assembly of claim 19 wherein the interconnect pad is positioned adjacent the first end of the multi-layer laminate substrate.

21. The suspension assembly of claim 19 wherein the interconnect pad is positioned proximate the flexible region.

22. The suspension assembly of claim 21 wherein the interconnect pad is a first interconnect pad, and further comprising a second interconnect pad positioned adjacent the first end of the multi-layer laminate substrate wherein the interconnect path electrically connects the first and second interconnect pads.

23. An assembly for mechanically and electrically linking an actuator arm with a slider supporting a read/write head proximate a rotating disc, the assembly comprising:

a multi-layer substrate having an attachment region for attachment to an actuator arm, a load beam region, a flexure region for supporting a slider and an interconnect path, the multi-layer substrate including a first end at the attachment region and a second end at the flexure region with the load beam region positioned therebetween;

wherein the multi-layer substrate has a support layer defining a top surface of the substrate, an insulator layer and a conductor layer defining a bottom surface of the substrate, the

interconnect path being defined by the insulator layer and the conductor layer; and
wherein the interconnect path terminates at the attachment region at a connection point to provide an electro-mechanical attachment to the actuator arm.

24. The assembly of claim 23, and further comprising a stiffener plate defined by the conductor layer.

25. The assembly of claim 23 wherein the multi-layer substrate further comprises a rail formed by a portion of the support layer and extending from the top surface of the substrate.

26. The assembly of claim 23 wherein a portion of the support layer has a thickness greater than a remainder of the support layer.

27. The assembly of claim 23 wherein the interconnect path further comprises an interconnect pad at the attachment region for electro-mechanical attachment to the actuator arm.

28. The assembly of claim 23 wherein the substrate further comprises a void formed in the load beam region adjacent the attachment region.

29. A data storage device comprising:
a storage medium;
a slider;
a read/write head supported by the slider for reading and writing data to and from the storage medium;

an actuator arm; and

an integrated suspension assembly including an attachment region for attaching to the actuator arm, a load beam region, flexure region for supporting the slider, and an interconnect path extending along the flexure region, the load beam region and the attachment region to electrically connect the slider to the actuator arm, the integrated suspension assembly further comprises a multi-layer laminate substrate having a support layer, an insulator layer and a conductor layer wherein the interconnect path is defined by the insulator layer and the conductor layer.